

ABSTRACT OF THE DISCLOSURE

A method for modulating the flatband voltage of semiconductor devices includes post-deposition annealing of a high-k dielectric film deposited by chemical vapor deposition, for example. The modulation of the flatband voltage, and thus, the threshold voltage of MOSFET devices, is achieved by post-deposition annealing of the high-k dielectric film and control of the annealing parameters. These include annealing gases, annealing temperatures and annealing times.